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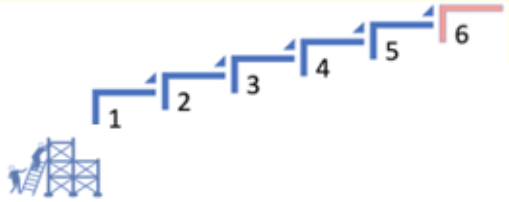
'GI-Pedagogy' Innovative Pedagogies for Teaching with GIS



Mon 7th November22
4 – 5pm

Co-funded by the Erasmus+ Programme of the European Union

Innovative Pedagogies for Teaching with GIS

Contents

- About the project
- Innovative **Pedagogical model** for **Teaching with GIS**
- **Toolkit** of innovative pedagogical approaches
- Teacher training **course**
- Case studies and a digital exhibition of the findings




Creating Vignettes / case studies

Gi Pedagogy:
Concept Cube

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S in GIS stands for **system.**

S in our model can also stand for **steps** of course and also **scaffolding.**

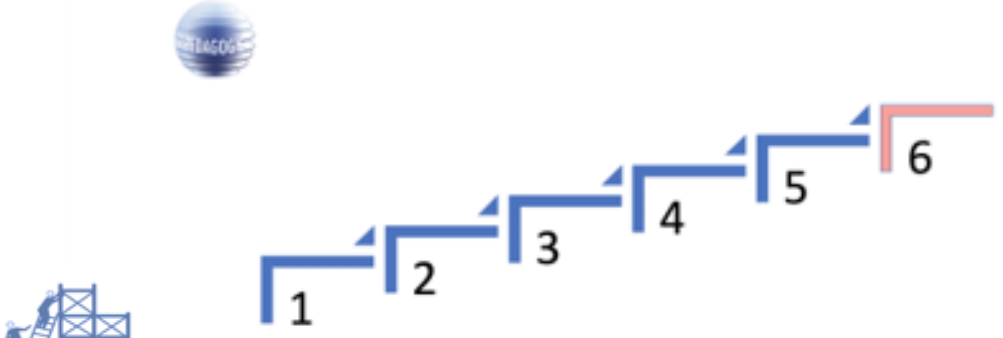
S can also stand for **schema / schemata**: the interconnected blocks of knowledge which are acquired at each level.

S is also about **solutions** to problems which GIS can help to produce.

And finally, the S can stand for the **stories** which are told using GIS: the narratives developed by teachers and learners.

Also S = **sustainability**

Our final thinking can be represented by this diagram:



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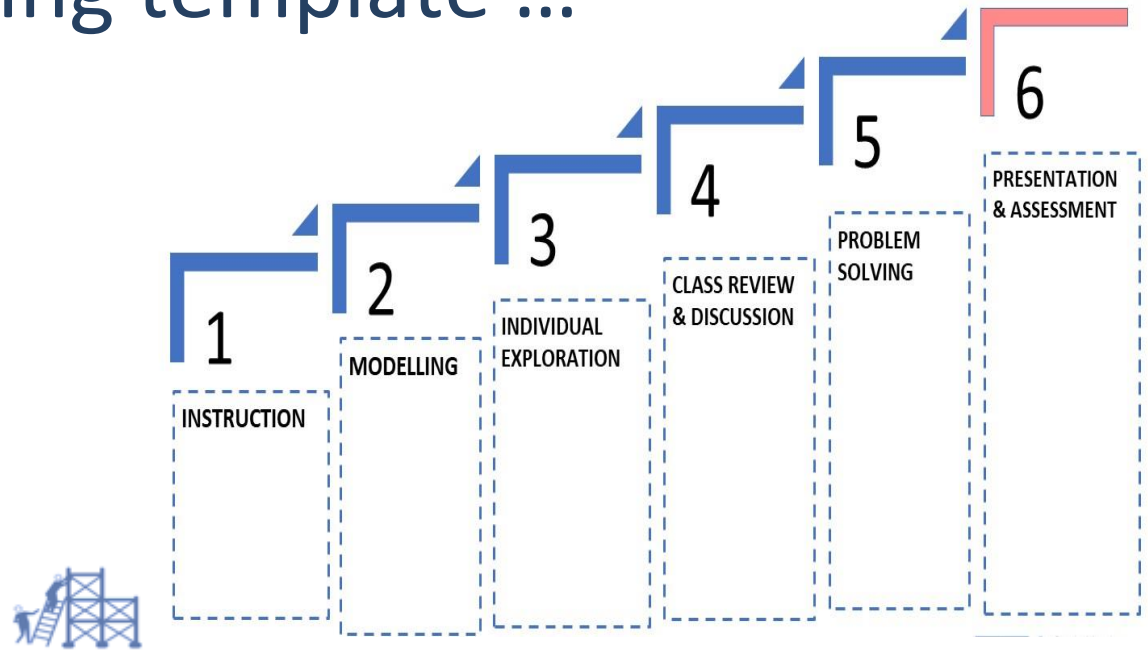
You will notice the ◢ between each step - these represent opportunities for **checking understanding** before moving up, and also the opportunity to slide back down if required. Steps may also be missed out by groups who may have already acquired schema, but may also be visited several times during a lesson sequence.

Creating template …

Rosenshine's Principles (dual coding icons) for teachers' use

Principle	Description	Icon
1	**Rosenshine 1 – (Daily) review** Start each lesson with a repetition of previous material. Regular repetition reinforces what was learned and leads to more spontaneous recall.	
2	**Rosenshine 2 - New materials in small steps** Present learning materials in small amounts. Accompany students with practice after each step.	
3	**Rosenshine 3 - Ask questions (onderwijsleergesprek)** They connect the new learning material with previous knowledge and practise it.	
4	**Rosenshine 4 - Provide models** Pupils can focus on the steps to solve a problem	
5	**Rosenshine 5 - Guide student practice** The best teachers spend a lot of time supervising the practice/learning of new material.	
6	**Rosenshine 6 - Check student understanding (onderwijsleergesprek)** By checking in between, pupils can learn the material with fewer mistakes	
7	**Rosenshine 7 - Obtain high success rate** Aim for the students to experience approximately 80% success in the exercises, questioning …	
8	**Rosenshine 8 - Scaffolds for difficult tasks** The teacher provides temporary support that decreases as students become more competent.	
9	**Rosenshine 9 - Independent practice** Provide practice time in and out of the classroom so that the learned material can be automated.	
10	**Rosenshine 10 – (Weekly and monthly) review** Pupils need to practise intensively in order to automate the material. Not necessary for this key study.	

Icons based on Rosenshine poster by Oliver Caviglioli



Step 1: Direct instruction / teacher facilitated stage

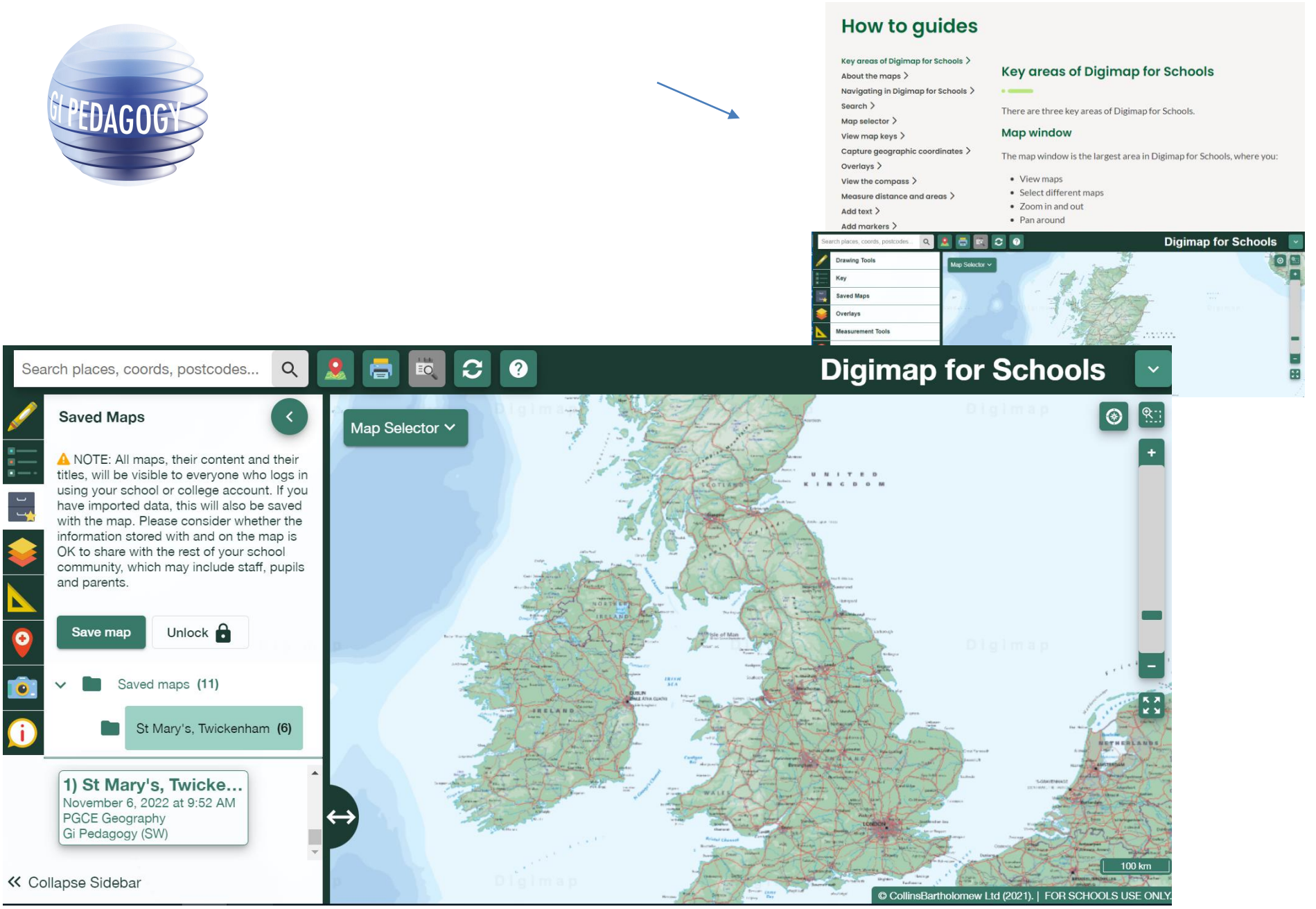
Step 2: Modelling / Scaffolding,

Step 3: Individual exploration

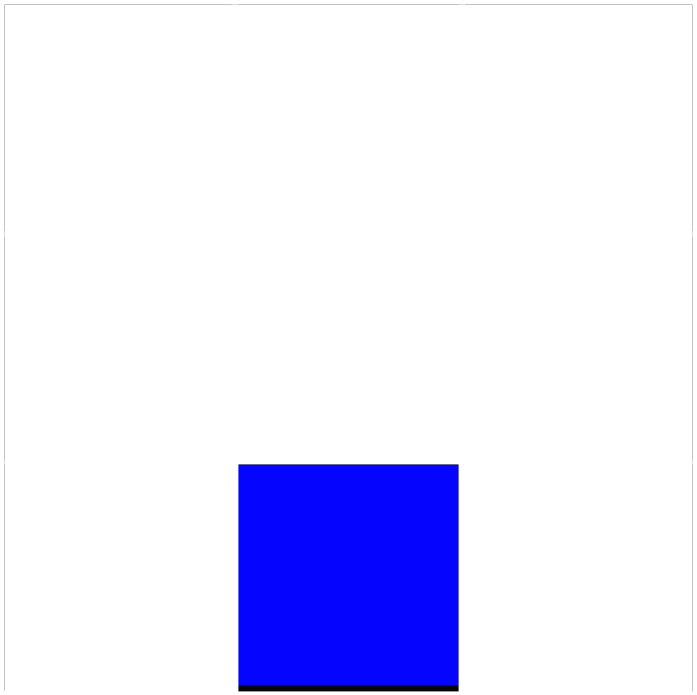
Step 4: Review - discussion

Step 5: Problem-solving

Step 6: Presentation/Assessment

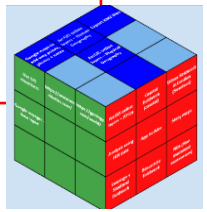

How to guides
Key areas of Digimap for Schools
About the maps
Navigating in Digimap for Schools
Search
Map selector
View map keys
Capture geographic coordinates
Overlays
View the compass
Measure distance and areas
Add text
Add markers
Key areas of Digimap for Schools
There are three key areas of Digimap for Schools.
Map window
The map window is the largest area in Digimap for Schools, where you:
View maps
Select different maps
Zoom in and out
Pan around
Digimap for Schools
Search places, coords, postcodes...
Saved Maps
NOTE: All maps, their content and their titles, will be visible to everyone who logs in using your school or college account. If you have imported data, this will also be saved with the map. Please consider whether the information stored with and on the map is OK to share with the rest of your school community, which may include staff, pupils and parents.
Save map
Unlock
Saved maps (11)
St Mary's, Twickenham (6)
1) St Mary's, Twicke...
November 6, 2022 at 9:52 AM
PGCE Geography
Gi Pedagogy (SW)
Collapse Sidebar
Map Selector
100 km
© CollinsBartholomew Ltd (2021). | FOR SCHOOLS USE ONLY

Working memory:
Current learning schema

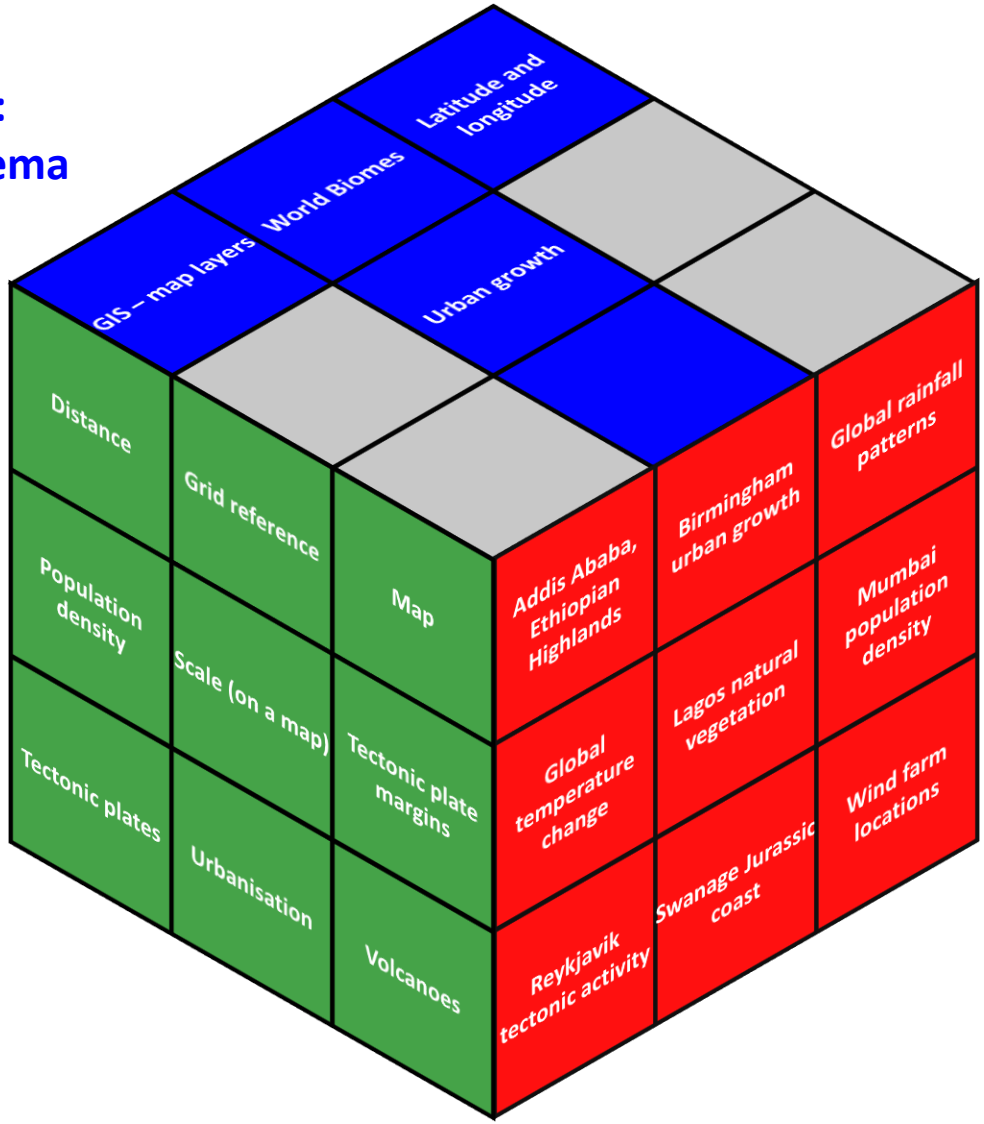


Gi Pedagogy:

Concept Cube



Working memory:
Current learning schema

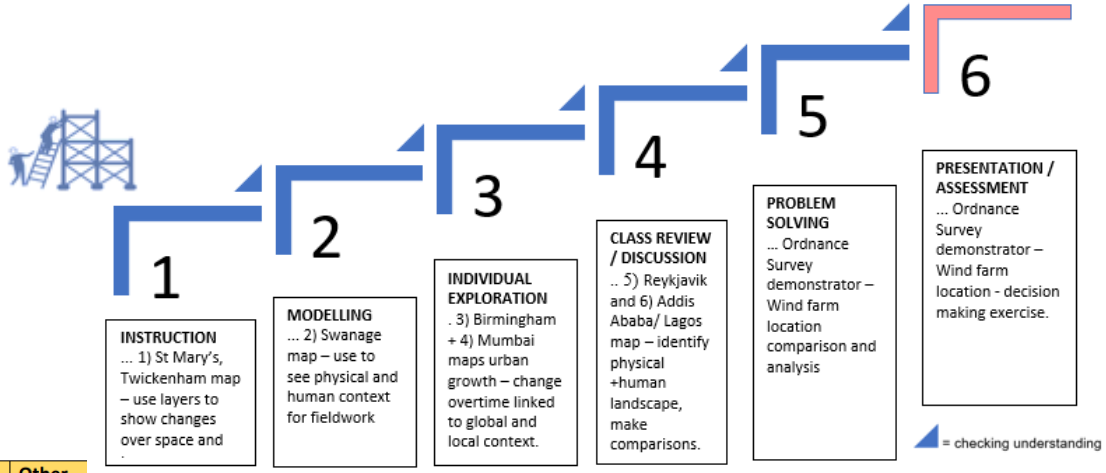


Long-term memory:
Prior learning schema

Long-term memory:
Future learning schema

Digimap - example

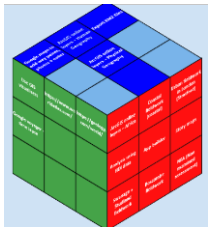
- Locational Knowledge
- Age group 11-16 years



CASE STUDY: Place knowledge – using GIS maps.

Step	*Identify a topic / story that is going to be told / explored using GIS*	Other
	TEACHING WITH GIS	
	Location and place knowledge: spatial thinking through sequenced mapping with GIS	
	Curriculum context: Thinking geographically – using location and GIS layers to create a better sense of place.	
	Target age group: 11 – 16 years (KS3 + 4)	
LOs	***Learning objectives***	
	[Ideas for Learning objective statements] • Retrieve prior learning about layered maps and their purpose. • Describe and explain links between where places are in the world and the importance of relative location and characteristics of different places and global interdependence • Describe, explain and evaluate influence of location on case-studies as places. 	
Res	**Key resources and embedded hyperlinks if appropriate**	
	e.g. GIS resource; .pptx .csv .doc; video or audio clips https://digimapforschools.edina.ac.uk/roam/map/schools	
	Individual exploration: *https://digimapforschools.edina.ac.uk/roam/map/schools*	

Gi Pedagogy: Concept Cube



Title:	**Working memory: Current learning schema**
Write key concept here:	
1	GIS – map layers
2	Latitude and longitude
3	Urban growth
4	World Biomes

	Long-term memory: Prior learning schema
1	Distance
2	Grid reference
3	Map
4	Population density
5	Scale (on a map)
6	Tectonic plate margins
7	Tectonic plates
8	Urbanisation
9	Volcanoes

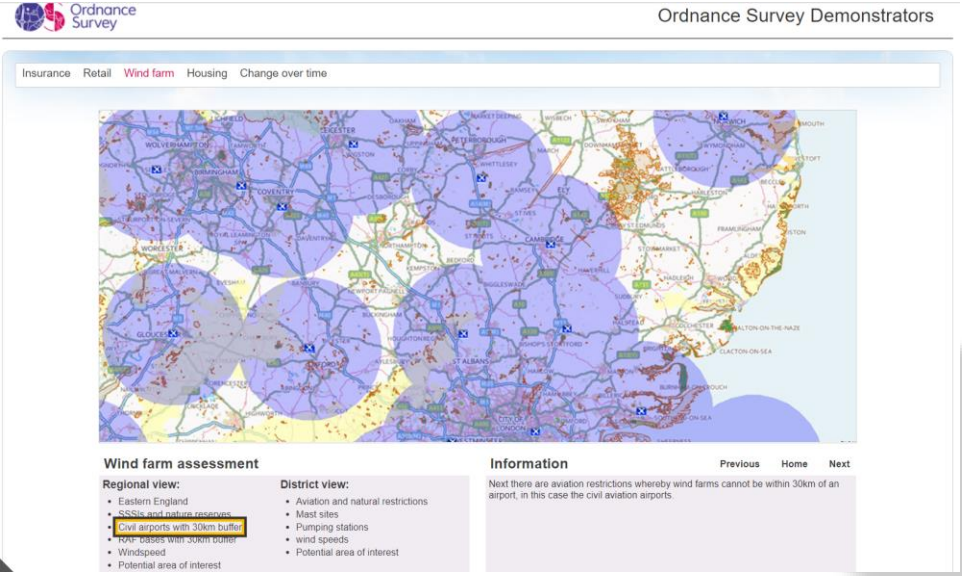
	Long-term memory: Future learning schema
1	Addis Ababa, Ethiopian Highlands
2	Birmingham urban growth
3	Global rainfall patterns
4	Global temperature change
5	Lagos natural vegetation
6	Mumbai population density
7	Reykjavik tectonic activity
8	Swanage Jurassic coast
9	Wind farm locations

Example 1a

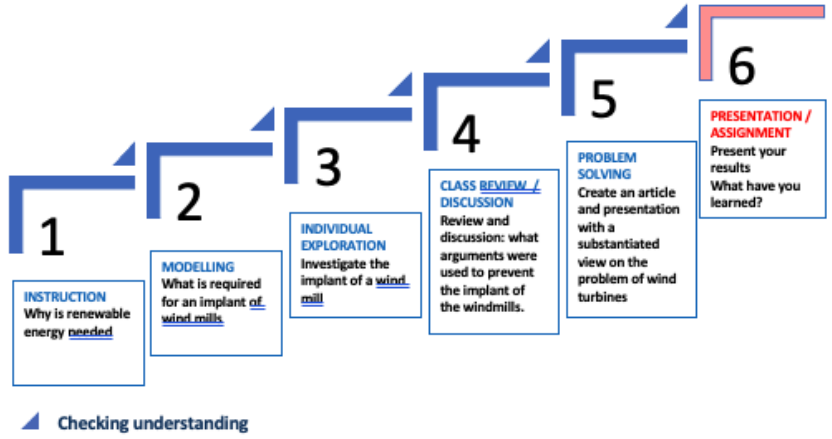
1) St Mary's, Twicke…
November 6, 2022 at 9:52 AM
PGCE Geography
Gi Pedagogy (SW)

Example 4

- **Wind Farm**
- **Age group 17-18 years**



demo



VIGNETTE - WIND ENERGY

Step	*Identify a topic / story that is going to be told / explored using GIS*	Other
	Teaching with GIS	
	Wind energy	
	Context / place in SoW: Sustainable development, energy transition (in K11-12 compulsory education topic)	
	Target age group: K11-12 = 17-18 y	*100 min*
LOs	***Learning objectives***	
	• Define alternative energy • Describe evaluate the possible impact of wind mills • Understand the nimby-syndrome • Interpreting maps • Explain • Describe, explain and evaluate possible influences on this location and distribution. Link to SDGs.	
Res	**Key resources and embedded hyperlinks if appropriate**	
	Ordnance Survey Demonstrators https://www.ordnancesurvey.co.uk/demos/logica/windfarm2.html	

What next?

An online course for Teachers...

- *Introduction to what geoinformation (GIS) is and why it should be used*
- *Innovative pedagogy and theoretical basis*
- *Sequencing and integrating geoinformation (GIS) into the curriculum*
- *Case-study examples of what good looks like*
- *Conclusion: 'I - we – you' section on creating and sharing ideas.*

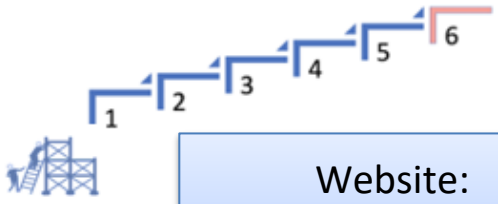
Multiplier Teacher Training event

St Mary's University → Thurs 17th Nov 22

sophie.wilson@stmarys.ac.uk

FREE EVENT

Any questions?



Website:
www.gi-pedagogy.eu

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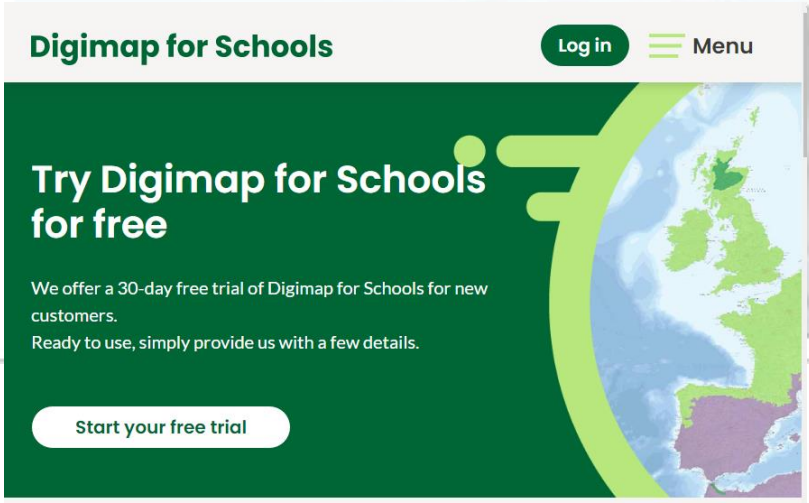

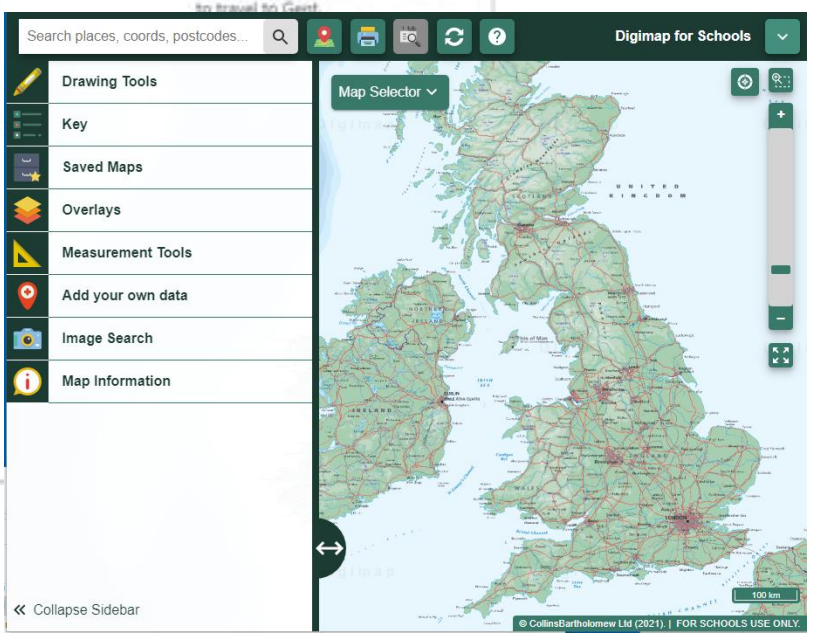

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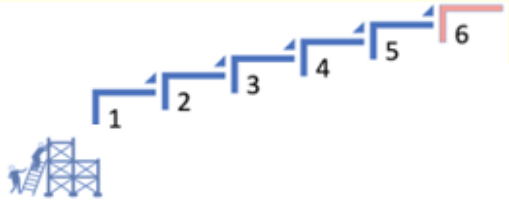

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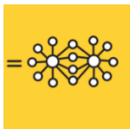
4	**Provide models** Pupils can focus on the steps to solve a problem.	
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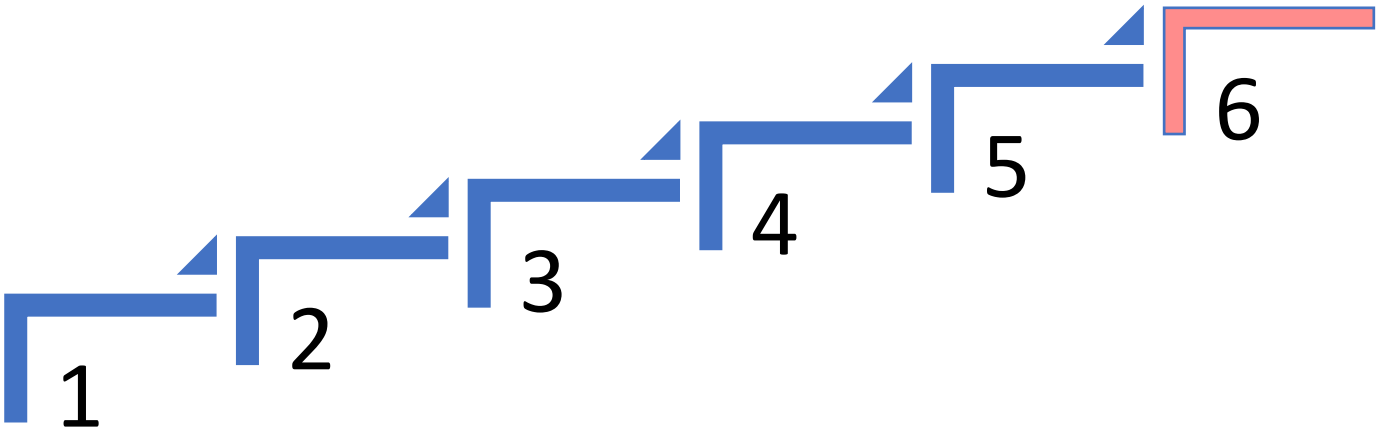

Step 1: Direct instruction / teacher facilitated stage - this is where schema building begins. Present new material.

Step 2: Modelling / Scaffolding, with review and questioning – what data are needed?

Step 3: Individual exploration

Step 4: Review - discussion

Step 5: Problem-solving

Step 6: Presentation/Assessment (Peer assessment possible too) and sharing of outcomes. This will also be the stage where students may feel secure enough to start their own exploration.

= checking understanding

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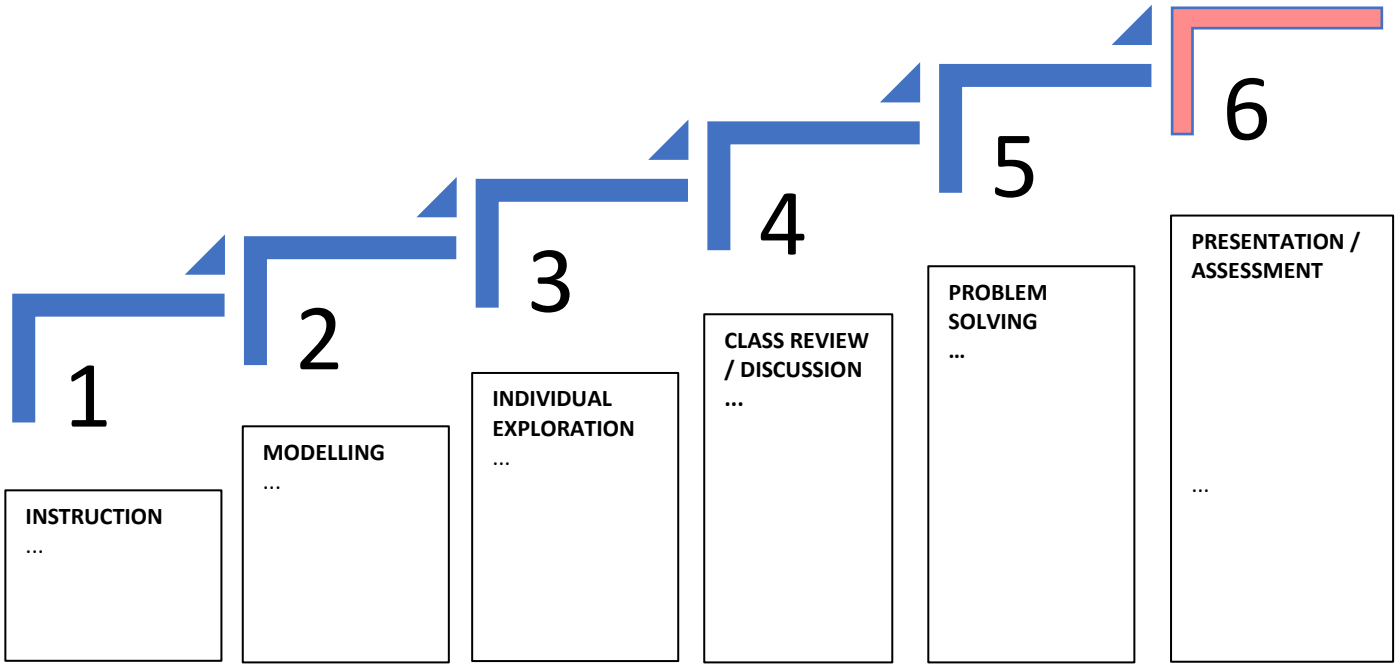

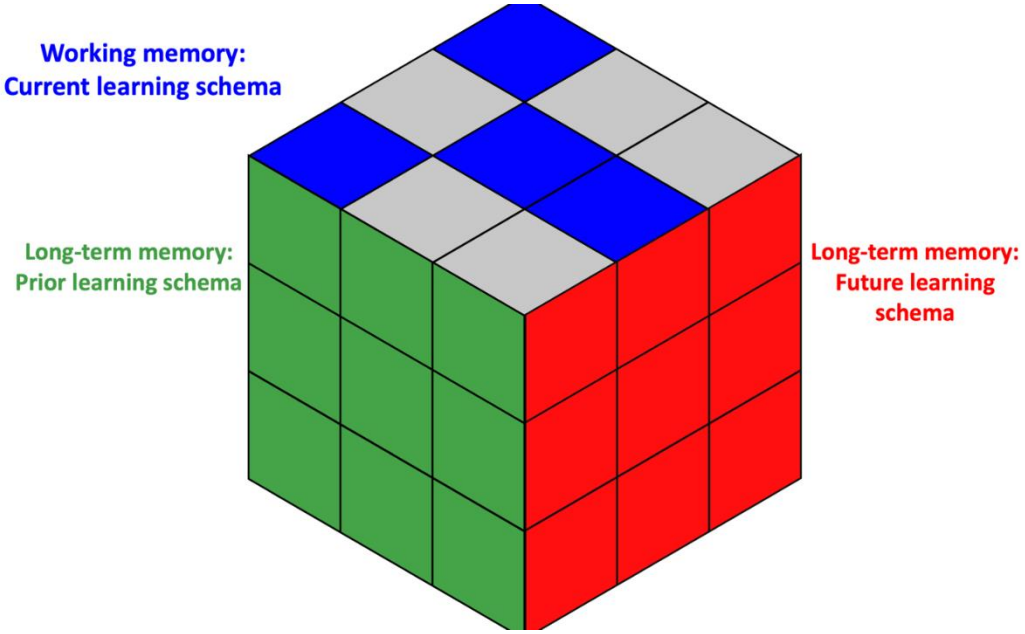

Concepts Cube to
add: (see the ppt also and change this information with the cube after creating it)

1.**Blue table - Working memory: Current learning schema**

Write up to five key ideas for the lesson. As well as the main concept, add three or four other key ideas that will build towards the main concept. If you are NOT using a 4th additional concept then leave the row that starts with '4' blank.

2.**Green table - Long-term memory: Prior learning schema**

Add up to nine items from prior learning that should already be part of the schema in students' long-term memory.

3.**Red table - Long-term memory: Future learning schema**

Add up to nine items that will be taught in future learning that will become part of the schema in students' long-term memory.

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